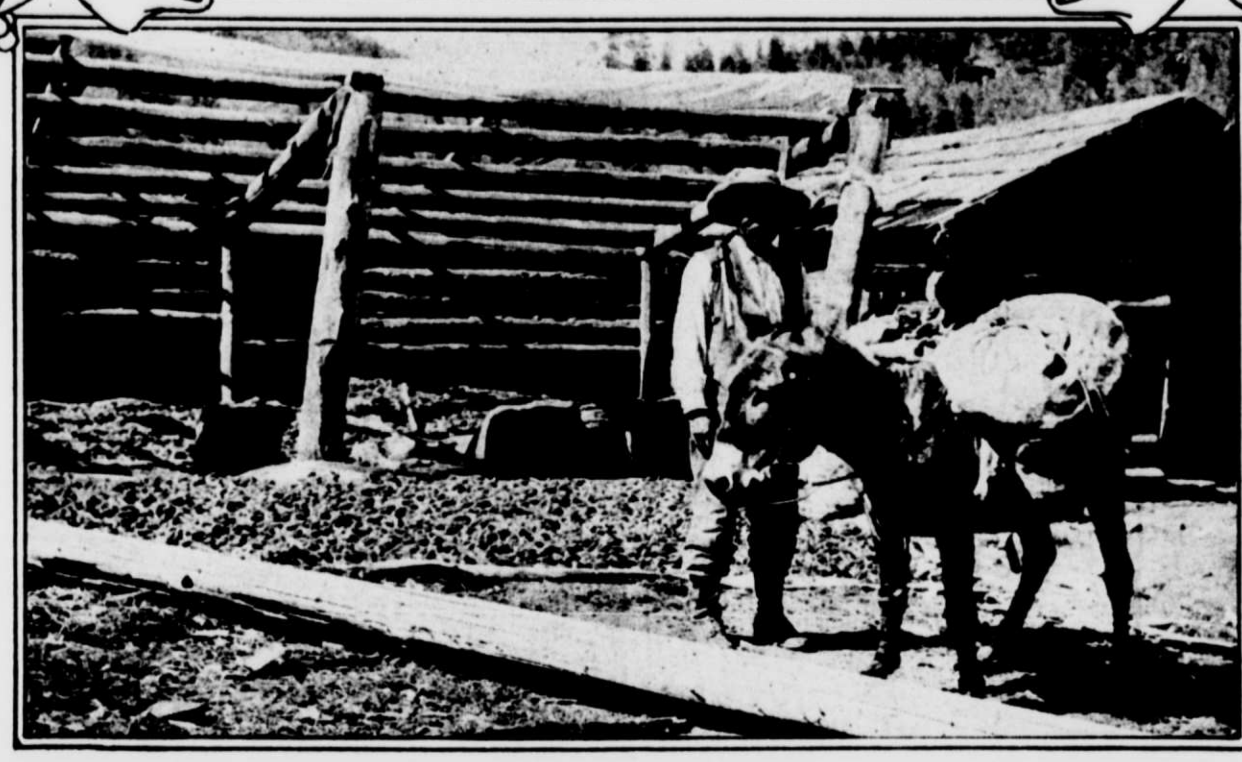
UNCLE SAM'S INCUBATORS FOR HATCHING BABY FORESTS

Taking baby trees out for planting.

A hand planted forest as it develops.



The gatherer of tree seed. Many persons find it profitable to collect cones, for which the Government pays about 50 cents a bushel.

Above—The first open air appearance of an incubated forest.

Every Year They Produce 10,000,000 Little Trees, Which Are Tended as Carefully as Infants

Important Work Being Done for Future Generations in Reforesting Millions of Acres of Waste Land

AT a score of places in the West the Federal Government is establishing great nurseries where the baby monarchs of the forest are as carefully tended as the foundlings in a hospital incubator, are reared past their days of infant dependence and ultimately set to grow in the open, where it is expected they will develop into the model forests of the future.

Every year 10,000,000 of these forest babies are brought into the world and raised by hand. Every year enough of them are graduated into the age of independence to be put into the open and to convert 16,000 acres of previously useless land into model forests. Eventually it is intended that 3,000,000 acres of this artificially induced forest shall be in evidence on the public domain and shall be passed on as a heritage to the generations that are yet to come.

The year's work of the forest service in transplanting its baby trees onto the waste land under its care is just completed. It is pronounced the most successful work of its kind so far accomplished, for the planting of forests is a comparatively new enterprise. The forest service has had it under development for a decade, during which the best manner of accomplishing the desired end has been worked out. Now the organization has been developed and the work is going steadily ahead, adding each year a certain acreage to what will ultimately be the model forests of the nation.

The Government has been working for a dozen years upon the best methods of planting regions that were cryingly in need of trees and on which nature had not been able to solve the problem. There were great bare burns where forest fires had denuded areas that had proved themselves ideal timber lands. There were watersheds that furnished the water supplies for important cities and the efficiency of which depended on the timber that grew upon them. There were areas where no timber grew for the ordinary uses of the residents, yet in which there was plenty of waste land that lent itself to the planting of trees.

The forest service had sought to seed certain of these areas. It must ascertain the best method of accomplishing this. It first tried the simple plan of going forth and broadcasting tree seed as a farmer would sow wheat. It hoped that enough of these would grow to establish a forest. But the proportions between the number of seeds produced by forest trees and the number of new plants that grow from them did not tend to substantiate the theory of the economy of nature. Broadcasting seed did not yield a stand of trees.

The experts thought perhaps the failure was due to the seed not getting into the ground. They developed what they called the seed spot method of forestation. Gangs of men went upon the barren lands, dug up plots at regular distances and planted seed. If these seeds grew a forest would result that was as regularly outlined as an orchard. Under such circumstances the seed usually yielded baby trees, but the squirrels, gophers, chipmunks and other rodents cut them down. The natural enemies were too numerous for them to survive. The seed spot method of making new forests grow wh[ere] they were desirable was pronounced a failure and went into the discard along with its predecessor, the broadcasting method.

These experiments showed that reforesting even approved lands with the timber that had previously grown on them was no easy task. The men having the work in hand had in the meantime been planting seeds in beds and raising young trees in well regulated nurseries. They had found that the secrets of the nurserymen might be applied to forest trees as successfully as to fruit trees. It was even a simpler problem, for the seed was as easily sown as clover and the beds yielded an abundance of the young plants. These were shifted into places in the open when they had gained sufficient strength and were there grown into lusty young plants three years of age.

These strong healthy plants were then put out on the hillsides upon which it was desirable that they should find permanent homes, there to grow for a century and develop into forest monarchs. It was found that they had passed the age where they might easily fall prey to the rodents, that they had strength enough to resist the cold and drought. They took hold of their task of forest building and grew rapidly.

It was a somewhat elaborate and expensive method of establishing forests where they were badly needed, but it accomplished the desired end. It was proved to be the method best fitted for the task in hand. Where the work was done under favorable circumstances and on a large scale it might be accomplished at a cost of $5 an acre and ranged from that minimum to a sum twice as great.

For the past two years all other methods have been quite generally given over in preference to that of planting nursery stock in the open. Nearly all of the 16,000 acres forested this spring were set out in this way. There are a few sections in which seed may be broadcasted with success, and this method is there followed. But these regions are limited. The nursery plants have come to be generally relied upon.

There is the Monument National Forest in the shadow of Pike's Peak, for instance. It supports a well developed nursery. In this nursery are being grown the baby trees that are to convert into model forests those lands that make up the watersheds for the towns of Colorado Springs, Manitou and Cascade. Last year 1,161 acres of the nursery trees were set out on these watersheds. There were yellow pines for the lower levels and Engelmann spruce and Douglas fir for the higher altitudes. Subsequent count showed nearly 90 per cent. of these trees to be living. Similar work is being done for many more important cities such as Salt Lake, Los Angeles and Portland.

In the Michigan national forest there are more than 100,000 acres of land that once grew magnificent timber producing forests but which have been cut over and burned over until only a scrubby growth survives. Here a nursery is developing great numbers of plants of Norway pine, which was the early profitable growth of the region, and these are being steadily reestablished. In the Black Hills region of the Dakotas devastating fires have left their scars upon the landscape where once towered the yellow pine, and here the little nursery trees of the same family are now being set out as patches upon the black waste that has been created by the fire demon. Altogether there are fifteen of these nurseries scattered about the map in the same miscellaneous way as are the national forests and each working out the problems peculiar to its region.

Probably the most interesting of the tasks of the forest nurseries is that to be found on the Nebraska National Forest, which, by the way, has the distinction of being so designated despite the fact that it is entirely treeless. The national forest without vegetation is located among the sand hills of western Nebraska. The region is a practical waste, used only as a cattle grazing country, and unable to support farms.

The sandstone mountain ranges that once traversed the country a little further west have been broken down by time and the winds have slowly drifted them to the eastward, converting the level plain into a sea of sand dunes. Grass has overgrown these dunes, giving to them a form that is somewhat permanent. Here and there, however, the wind is likely to get beneath the grass and cut out the dry sand. The top of a hill may thus be transfigured into a cup that looks like the crater of a volcano. Many strange and fantastic effects are produced in this way.

It was determined a decade ago that this waste region should be converted into a forest. It was otherwise useless and all that part of the world was in dire need of timber. A nursery was established and the task of planting 200,000 acres of sand dunes with trees was begun.

Years were spent in determining the sort of trees that would survive in these surroundings where trees had never grown before. Little plants were taken up from the forests of the Black Hills, from the Rocky Mountain regions that most nearly approximated these conditions, from the nearest forest regions up Michigan way. They were planted in the sand dunes, but only two varieties survived—the yellow pine and the jack pine.

These were hardy species that grew in much of the fringe of the Great Plains region and did not require a great amount of rainfall. Some of the jack pines that were planted twelve years ago are now old enough to bear seed and the baby trees are being sown from parents that have proved themselves on the sand dunes, and the resulting crop is expected to show itself better adapted than the varieties that have gone before. Eventually a great forest will wave its evergreen tops above a region that was once a waste of shifting sand that gave little return for the space it occupied on the map.

The great advantage of forests that are planted by the hand of man rests in the fact that the very best varieties of trees may be selected for the planting. When trees are thus set out it is fifty to a hundred years before the crop of timber is to be harvested. Men living to-day will realize no profits from the planting. Incidental benefits, such as the protection of watersheds, may be felt earlier, of course, but the people of the future will harvest the timber crop.

These profits of the long run concern the nation. They make it a better proposition to take bare land and seed it into the best producing timber than to accept the same areas already covered with the varieties that nature has placed upon them. But it requires a very unselfish farsightedness to spend money to-day for the benefit of generations yet unborn. Congress is appropriating some money for such a purpose, but the amounts are small and the task is so large that progress toward its accomplishment is very slow.

When consideration is being given to the desirable varieties for planting the Douglas fir, most magnificent timber producer of them all, attracts first attention. It finds its ideal home in the Rockies and the Pacific coast ranges. It stands 250 feet high in its stocking feet and is twelve feet through at the base. If the Douglas fir were substituted for the natural growth of the region in which it also thrives the timber crop of a hundred years from now would probably be worth ten times as much as it will otherwise yield.

The Western yellow pine is a hardy growth for the lower altitudes. The Engelmann spruce pushes back the timber line far up among the snows and is almost as choice a tree as the Douglas fir. The lodgepole pine of the Indian offers itself to propagation and yields good timber, while the white pine and the spruce of New England grow forests that may well be objects of national pride.

It is interesting to note that these magnificent forest trees which develop into such herculean proportions come from seed that are little larger than the proverbial progenitor of the mustard plant. If every seed on one Engelmann spruce were to grow into a tree the whole of the United States might become a solid spruce plantation within the generation. A pound of Engelmann spruce seed contains 170,000 possible plants. In a pound of the seed of the Douglas fir there are 50,000 individuals. If a single tree should yield 100 pounds of seed and every seed should grow the area that would be converted into forests would be enormous.

Yet as a matter of fact each hundred pounds of such seed probably produces less than one tree that grows to maturity. This figures out, in the case of the spruce, one survivor out of a possible 17,000,000. It becomes evident that out of the myriad of seeds which one of these trees yields before it finds its way to the lumber mill not two succeed in producing other great trees. If each accomplished this end the forest wealth of the nation would be doubled. It therefore seems somewhat strange that the economy of nature should have become a platitude.

The manner in which tree seed is produced is interesting and constitutes a new industry. Most of the important lumber trees are conifers and evergreens. In the fall their cones mature and drop to the ground. At the base of the fingers of these cones nature has planted the tiny seed. She made the cone round that it might roll away and find possible root at a distance. As the cone rolls about and dries out the seeds shake out of it. So are they scattered. If nature had not been careful about these details she probably would never have grown any forests at all.

The forest service, when the season of ripening seed comes, offers to buy from the people who live in the regions where the right sort of seeds abound all cones that may be brought in. The cones are paid for at prices around 50 cents a bushel. Men, women and children go into the forests and collect them. It is the season when the children of the forest regions have their golden opportunity for earning money.

When the cones are in the possession of the foresters they are dried and placed in shakers that operate on the principle of the barrel churn. Here they are shaken until the tiny seeds have been jarred out. The empty cones are thrown away and the tiny seed gathered ready for the sowing into the beds. So is the material for the forest incubators secured.

A THRILLING MOMENT AT THE TUXEDO HORSE SHOW

Miss Carol Harriman taking her hunter Sir Charles over the high jump.

Saving on the Gas Bills

"TALK about handing out free gas ranges or renting them out at a nominal rental," said a man in the employ of a gas company, "there is another item that encourages gas consumption, and that is wall papers.

"If I were running the business I would hand out free wall papers. [illegible] I would do the choosing. Rich deep greens and browns—they are the colors that bring up your bills and our profits."

How many people realize that a large percentage of their gas money may be sunk into their walls and wasted? It may be only a matter of color of your wall paper whether you burn one or three burners.

White walls, of course, absorb the least light; only 30 per cent. But nearly everybody wants something to meet the eye. A chrome yellow absorbs only 38 per cent. Paper of an orange shade robs you only of [illegible] per cent. of your light.

It is when you get into the reds and greens and browns that the light begins to dim. A dark green wall paper, so restful to the eye, absorbs 82 per cent. of the light. And paper of a deep chocolate leaves only [illegible] per cent. of the light rays for its power of absorption is 96 per cent.